

139871SG2025
Basecamp - Torch Lake
Rapid Infiltration Basin

04.20.26

Assumptions:

Flowrate (Q), gal/day	15,000
Infiltration Rate (IR), in/hr	36 From GZ Infiltrometer test 04/09/26
Number of Operating Days, (OD), day/yr	365
Application Factor (F)	0.04 From Table 13-13
Operating Cycle, day	10
Infiltration Time, day	3
Number of Basins	2
Basins will be about twice as long as they are wide	
Each basin needs to contain 1 day worth of flow	
Annual Hydraulic Loading Rate (Lw), ft/yr	1051
Average Application Rate (Ra), ft/d	9.6
Area Required for Infiltration (Ai), sft	696
Required Area per Basin, sft	348
Basin Length, ft	35 USE
Basin Width, ft	12 USE
Design basin Bottom Area, sft	420
Bottom Area w/ 5ft radii fillets, sft	400
Basin required Volume, cft	1,003
Basin Required Depth to Hold 1/2 day Volume, ft	2.39
Freeboard Required, ft	2.00
Basin Required Depth, ft	4.39
Basin Depth, ft	5 USE
Interior side slopes, ft/ft	1 on 4
Exterior Side Slopes, ft/ft	1 on 4
Top of berm width, ft	8.0
# doses per day	3
Volume per dose, gal	5,000

					Constants		Area (cm ²)	Area (in ²)	
Project Name:	Base Camp Double Ring Infiltrometer Test				Inner Ring		729	113.0	
Project No.:	250318				Annular Space		2189	339.3	
Tested By:	Brendan Holbrook								
Test Location:	North of existing drainfield				Penetration Depth of Outer Ring:			6 inches	
Test Liquid Used:	TC Tap Water		pH:		Water Table Depth:			Not Encountered (greater than 24-in)	
Trial #	Start / End	Date (MM/DD/YY)	Time (HR:MIN)	Elapsed Time Chg/ (Total) (Min)	Elapsed Time (hrs)	Inner Ring Reading (in, BTOR)	Flow Readings		Remarks
							Inner Ring Flow (in ³)	Annular Space Reading (in, BTOR)	
1	Start Test	3/27/2026	12:36	0.0		3.000		3.00	
			12:38	2.0	0.0333	4.300	146.89		39.00
			12:40	2.0	0.0333	5.500	135.59		36.00
			12:42	2.0	0.0333	6.70	135.59		36.00
			12:44	2.0	0.0333	7.90	135.59		36.00
			12:46	2.0	0.0333	9.100	135.59		36.00
			12:48	2.0	0.0333	10.20	124.29		33.00
	End Test			12.0	0.2000		813.56		36.00
									<- Trial Average

Falling Head Infiltration Test using a Double Ring Infiltrometer.

TABLE 13-13
Recommended application factors to be used in calculating the average annual hydraulic-loading rates for rapid infiltration systems^a

Field measurement	Application factor, F
Basin infiltration test	10–15% of the minimum measured infiltration rate
Cylinder infiltrometer and air entry permeameter measurements	2–4% of the minimum measured infiltration rate
Vertical hydraulic conductivity measurements	4–10% of the conductivity of the most restrictive soil layer

^a From Ref. 40.